REMARKS

Claims 34–44 were pending in the application. Claims 34, 40, 42, and 44 have been amended to correct a minor typographical error and to clarify the invention. No new matter has been added. Upon entry of the present amendment, claims 34–44 will be pending.

ART REJECTIONS

Claims 34–37 are rejected under 35 U.S.C. § 103(a) as allegedly being obvious over United States Patent No. 4,949,214 to Spencer ("Spencer") in view of United States Patent No. 4,672,175 to Niven ("Niven").

Claims 38–44 are rejected under 35 U.S.C. § 103(a) as allegedly being obvious over United States Patent No. 4,949,214 to Spencer ("Spencer") in view of United States Patent No. 4,672,175 to Niven ("Niven") and United States Patent No. 5,185,684 to Beihoff ("Beihoff").

1. THE CLAIMS ARE NOT OBVIOUS OVER SPENCER IN VIEW OF NIVEN

Independent claims 34, 40 and 44 are directed to electrical power fault detection and isolation apparatus comprising a sensor circuit that detects a transient, arc or ground fault by detecting the *voltage* drops across the main contacts. Independent claims 41 and 43 are directed methods of detecting a transient, arc or ground fault comprising the step of detecting the *voltage* drops across the main contacts.

By contrast, Spencer discloses overload current detector circuits where the circuit breaker is tripped in response to the magnitude of instantaneous *current* flow. *See, e.g.*, Spencer, Abstract. In one embodiment, a solenoid trips the circuit breaker when an excessive *current* flow through the load power conductor 40 causes a bimetallic strip to deflect, which breaks the contact between mechanical catch 32 and movable contact 30 of the breaker 12. *See, e.g.*, Spencer, col. 5, ll. 64-66 and col. 6, ll. 2-11. In an alternative embodiment, a ground fault interrupter trips the circuit breaker in response to small differences in the *current* flowing through the load power conductor 40 relative to the current flowing through the load neutral conductor 42. *See, e.g.*, Spencer, col. 11, ll. 3-11. Given that Spencer's overload current detector is a current-based detector, Applicants submit that Spencer does not anticipate Applicants' claimed invention.

Applicants submit that combining Spencer with Niven still does not arrive at or suggest Applicants' claimed invention, because Niven does not cure the deficiencies in Spencer's teachings. Applicants respectfully disagrees with the Office Action's contention

that Nivens teaches Applicants' sensing diode. Nivens merely teaches using a diode to act as a shunt. In particular, Nivens teaches using a shunting switch to shunt welding current flow around the diode when the arc is struck. Niven use for the diode could be served by any passive device, such as a resistor. Niven does not teach or suggest Applicants' claimed fault protection apparatus, which uses a sensing diode as a fault detecting device for detecting the voltage drop across the main contacts. Therefore, Applicants submit that the claims are not obvious over Spencer in view of Niven, because the references, taken singly or in combination, do not teach or suggest Applicants' claimed invention.

The Examiner also contends that "[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Spencer's apparatus to include a sensing diode as taught by Niven to conduct the fault for a short duration, because the sensing diode eliminates the need to calibrate the sensing circuitry components for the load current as it the detects fault by the voltage drop across its terminals due to fault current and the resistance (very small) of the relay element." However, the Office Action has not pointed to any portion of either reference that teaches the motivation for, or the desirability of, modifying Spencer's current-based detection apparatus to produce in Applicants' claimed invention. Therefore, Applicants respectfully submit that Applicants' claimed invention is not obvious over Spencer in combination with Niven.

The Examiner also erroneously contends that Spencer discloses a time delay circuit that "isolates the sensor circuit from the main contacts during a predetermined time period after the control circuit connects the power supply to the load." However, Spencer does not use a time delay circuit to isolate in the manner of Applicants' claimed invention. Spencer uses a time delay circuit merely for suppressing noise spikes. *See, e.g.*, Spencer, col. 7, ll. 16-18. By contrast, Applicants' apparatus isolates the sensor circuit from the main contacts during a predetermined time period. Given that Niven also does not teach or suggest isolating a sensor circuit from the main contacts during a predetermined time period, then Niven cannot cure the deficiencies in the teachings of Spencer. Therefore, Applicants respectfully submit that Applicants' claimed invention is not obvious over Spencer in combination with Niven.

In view of the foregoing, the claim rejections under 35 U.S.C. § 103(a) over Spencer in view of Niven should be withdrawn.

2. THE CLAIMS ARE NOT OBVIOUS OVER SPENCER IN VIEW OF NIVEN AND BEIHOFF

Applicants have previously explained that Applicants' claimed invention is

not obvious over the teachings of Spencer in combination with Niven. Applicants submit that combining the teachings of Beihoff with those of Spencer and Niven still does not arrive at or suggest Applicants' claimed invention. The Examiner has introduced the teachings of Beihoff for the use of an optocoupler diode, and an AND gate. However, Beihoff does not teach or suggest Applicants' apparatus and method that provide for transient, arc, and ground fault detection and isolation by detecting the *voltage* drops across the main contacts. Therefore, Applicants respectfully submit that Applicants' claimed invention is not obvious over Spencer in view of Niven and Beihoff.

In view of the foregoing, the claim rejections under 35 U.S.C. § 103(a) over Spencer in view of Niven and Beihoff should be withdrawn.

CONCLUSION

Applicants respectfully request that the foregoing amendments and remarks be made of record in the file of the above-identified application. Applicants believe that each ground for rejection has been successfully overcome or obviated, and that all pending claims are in condition for allowance. Withdrawal of the Examiner's rejections, and allowance of the application, are respectfully requested. If any issues remain in connection herewith, the Examiner is respectfully invited to telephone the undersigned to discuss the same.

No fee is believed due in connection with this response. In the event that a fee is required, please charge any such fees to Jones Day Deposit Account No. 50-3013.

Respectfully submitted,

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for Ognjan V. Shentov

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